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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,637	08/28/2003	Shigeki Imai	0756-7192	5558
31780	7590	09/11/2007		
ERIC ROBINSON			EXAMINER	
PMB 955			CHIEN, LUCY P	
21010 SOUTHBANK ST.				
POTOMAC FALLS, VA 20165			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/649,637	Applicant(s) IMAI ET AL.	
	Examiner Lucy P. Chien	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-15,17-23,25-31,33-39 and 43-54 is/are pending in the application.
- 4a) Of the above claim(s) 1-7,9-15,17-23,25-31,37,38 and 52-54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-36,39 and 43-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/27/06,3/16/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Election/Restrictions***

Applicant's election without traverse of Species I in the reply filed on 3/16/2007 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 33-35,39,43-45,47 are rejected under 35 U.S.C. 102(b) as being anticipated by Shannon (US 5268679).

Regarding Claim 33,43

Shannon discloses (Fig. 2) a first light source (coming from any of the levels)), a second light source (O), a first substrate (10 of final level 3) provided between said first light source and second light source; a first optical shutter ((11) of final level 3, liquid crystal) provided over said first substrate ((10) of final level 3, a second substrate ((12) of final level 1), provided adjacent to the first substrate so that the first substrate is provided between the first light source and the second substrate; a second optical shutter ((11) of final level 1, column 6, row 18-32, liquid crystal) provided between the

first substrate and said second substrate ((12 of final level 1); a third substrate ((10) of final level 1), provided between the second substrate and the second light source; a first optical sensor ((11) of final level 1, photodiode) provided between said third substrate ((10) of final level 1) and under said second substrate ((12 of final level 1), and a second optical sensor ((11) of final level 3) provided over said first substrate (10 of final level 3), a first electronic circuit (such as a tft)(11 of final level 3) provided between third substrate and second substrate; and a second electronic circuit provided over the first substrate ((11) of final level 3) wherein a first light emitted from said first light source is inputted into said first optical shutter ((11) of final level 3), and transmission and non-transmission of said first light are controlled by said first optical shutter (that is what shutters do), wherein in a case where said first optical shutter ((11) of final level 3) transmits said first light, the transmitted first light is inputted into said first optical sensor ((11) of final level 1) to convert said first light into a first electric signal by a first electronic circuit (TFT switching elements, ((11) of final level 1) ,wherein a second light emitted from said second light source (O) is inputted into said second optical shutter ((11) of final level 1,liquid crystal) , and transmission and non-transmission of said second light are controlled by said second optical shutter ((11) of final level 1), and wherein in a case where said second optical shutter transmits said second light (what shutters do), the transmitted second light is inputted into said second optical sensor to convert said second light into a second electric signal by a second electronic circuit (TFT). Regarding Claim 43, the first, second, and third substrate are laminated to each other is met by Shannon. Shannon shows the substrates being stacked on each other.

Art Unit: 2871

Regarding Claim 34,44,

Shannon discloses (Fig. 2 ,column 6, row 18-32) wherein at least one of said first electronic circuit and said second electronic circuit comprises a thin film transistor.

Regarding Claim 35,45,

Shannon discloses (Fig. 3) wherein at least one of said first electronic circuit and said second electronic circuit comprises a thin film transistor and a single crystal IC (Integrated Circuit) chip.

Regarding Claim 39,47

Shannon discloses (Fig. 2 ,column 6, row 18-32) at least one of the first optical shutter and the second optical shutter comprises a liquid crystal ((11) of final level 1) which is sandwiched between two sheets of transparent substrate (10 and 12 of final level 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2871

Claim 36,46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shannon (US 5268679) in view of Williams (US 5491571).

Regarding Claim 36,46.

Shannon discloses everything as disclosed above.

Shannon does not disclose at least one of said first optical sensor and said second optical sensor is an amorphous silicon photodiode.

William discloses that higher crystalline had benefits of improved speed (Column 2, lines 9-21) and therefore considering the tradeoff cost and manufacturing complexity for the higher levels of crystallinity the level of crystallinity is a result effective for the photodiode and driving circuit. Therefore, the selection of a particular level of crystallinity, i.e. amorphous polysilicon or single crystal silicon would have been within the ordinary skill level.

Therefore, It would have been obvious to one of ordinary skilled in the art to modify Shannon's display to include an amorphous silicon photodiode shown by Williams motivated by the desire for the lowest-speed but simplest manufacturing.

Claim 48-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shannon (US 5268679) in view of Suda (US 4823178).

Regarding Claim 48.

Shannon discloses everything disclosed above. Shannon discloses the first and second optical sensor comprises the use of a thin film transistor and photodiodes.

Shannon does not disclose a cathode electrode, and an anode electrode, and an amorphous film provided between said cathode electrode and said from said second light source is transmitted inputted into said second optical shutter, and of said second light are controlled by said second anode electrode, and wherein said thin film transistor for reset comprises a semiconductor film, and a gate electrode provided adjacent to said semiconductor film with a gate insulating film there between, and wherein said cathode electrode is connected with said semiconductor film.

Suda discloses (Fig. 1) a cathode electrode (16), and an anode electrode (18), and an amorphous film (17) provided between said cathode electrode and said from said second light source is transmitted inputted into said second optical shutter, and of said second light are controlled by said second anode electrode (property of anode), and wherein said thin film transistor for reset comprises a semiconductor film (14), and a gate electrode (20) provided adjacent to said semiconductor film (14) with a gate insulating film (23) there between to provide a photosensor for realizing an image sensor which can meet the requirements of high resolution, high operation speed and wherein said cathode electrode (16) is connected with said semiconductor film (14). (abstract).

It would have been obvious to one of ordinary skilled in the art to modify Shannon's display to include Suda's TFT comprising of anodes, cathodes, semiconductor film, gate electrode, and gate insulating film motivated by the desire to provide a photosensor for realizing an image sensor which can meet the requirements of high resolution, high operation speed. (abstract).

Regarding Claim 49.

In addition to Shannon and Suda as disclosed above, Shannon discloses wherein at least one of said first electronic circuit and said second electronic circuit comprises a thin film transistor. (Fig. 2 ,column 6, row 18-32)

Regarding Claim 50.

In addition to Shannon and Suda as disclosed above, Shannon (Fig. 3) discloses wherein at least one of said first electronic circuit and said second electronic circuit comprises a thin film transistor and a single crystal IC (Integrated Circuit) chip.

Regarding Claim 51.

In addition to Shannon and Suda as disclosed above, Shannon discloses wherein at least one of said first optical shutter and said second optical shutter comprises a liquid crystal which is sandwiched between two sheets of transparent substrates. (Fig. 2 ,column 6, row 18-32)

Response to Arguments

Applicant's arguments filed 11/27/2006 have been fully considered but they are not persuasive.

Applicant's arguments that "Shannon does not teach that a first light emitted from a first light source is inputted into a first optical shutter (active layer 11 of level 3)..." light coming from a different emitter such as active layer 11 of level 2 is inputted into the first optical shutter.

Applicant's arguments that "The office action does not explain how level 4 of Shannon functions as a light source, nor does Shannon appear to teach that level 4 is a light source." Please see office action sent out on 11/18/2005 that states: The language regarding light from different sources is met if the light for those light shutters and/or sensors comes from another shutter layer, as the light through each "shutter" comes from a different source (different shutter). The use of light "source" as used in the instant specification does not appear to be used as light coming from a different emitter, but light which has come from a different place (i.e. through a different shutter). Therefore, with five stacked layers having shutters and sensors, the first shutter layer provides the claimed light sources (first, second, etc.) as the light going through the top layer of shutters. The next provides the claimed shutters which give the claimed control of the sensors, and the next gives the claimed sensors controlled by the shutters, as well as the first substrate. The next two provide the second and third substrate over which at least some of the elements are located. As Shannon has 5+ layers, it therefore meets the limitations of each independent claim.

Applicant's arguments that "Official Action relies on active layer 11 of level 3 to teach both a first optical shutter and a second optical sensor, an on active layer 11 of level 1 to teach both second optical shutter and first optical sensor.." Shannon teaches (Column 6, rows 18-32) that active layer 11 of level 3 to teach both a first/second optical shutter (liquid crystal) and a first/second optical sensor (photodiode) are in one layer. Therefore the rejection is maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lucy P Chien

Examiner

Art Unit 2871


ANDREW SCHECHTER
PATENT EXAMINER